

PAIR AND SINGLE MID-WATER TRAWL GEAR CHARACTERISTICS LOG

This log contains detailed questions about the gear fished. Complete a new log for each uniquely configured gear (as defined below) **hauled** during a trip. These unique configurations may be based on changes made to the length of the headrope, mesh size in the codend, *etc.* Any changes in these fields require the completion of another Pair and Single Mid-Water Trawl Gear Characteristics Log. Do not solely use the COMMENTS section to explain these differences between gears. Number each gear configuration sequentially.

If the gear is set out and hauled more than once during a trip, do not complete a new Pair and Single Mid-Water Trawl Gear Characteristics Log for the multiple hauls. Rather, record on the Pair and Single Mid-Water Trawl Haul Log which gear numbers are being hauled. In addition, record any other information necessary to understand the manner in which the gear was set/hauled in COMMENTS.

If the vessel has two or more identical gears which are hauled during the trip, assign each gear its own gear number and record them on separate Pair and Single Mid-Water Trawl Gear Characteristics Logs with 10 random codend mesh size measurements collected for each codend. See the definitions below and GEAR NUMBER(S) (#1) for more information on defining and numbering gears.

If information is unavailable or unknown to any question except a “No/Yes” question, record a dash (-) in the field. If the answer to a “No/Yes” question is unknown, record a “9” on the line next to the code for “No” to indicate that the field was not skipped, but the answer is unknown. If a field relates to a question to which you previously answered “No”, leave the field blank.

Become familiar with the following definitions.

Codend: Two rectangular pieces of netting made with heavy twine. The top edges are joined to the narrow end of the bellies, the selvages are laced together, and a “codline” or codend clip is woven through the lower meshes for securing the section into a bag where the fish are held until released onboard the trawler.

Fishing Circle: The section of the net located behind the wings and before the belly. It is the area which creates the largest opening in the net. See Figure 10.

Headrope: The line, generally of fiber rope or steel wire rope, which fits along the top wings and center part of the square to form the upper lip of the pair trawl.

Escape Outlet: An opening in the net to facilitate escape of fish, sea turtles, marine mammals, *etc.* See Figure 11.

Blowout: Generally made with a lighter material than the rest of the net, these net sections are used for maintaining the net’s shape and stability as it is pulled through the water. See Figure 4.

Gear: A trawl, commonly referred to as “the net”. This includes the headrope, footrope, floats, weights, netting and any other attached equipment.

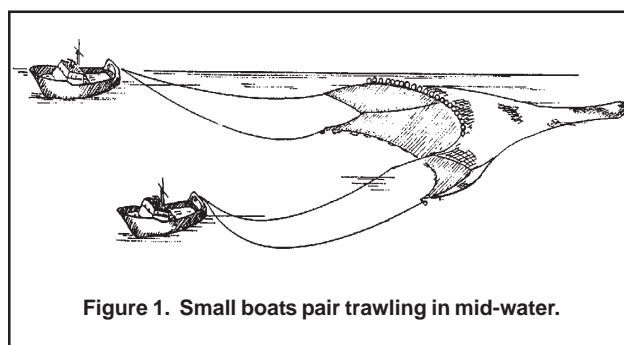


Figure 1. Small boats pair trawling in mid-water.

DEFINITIONS

Pair Trawl: Two vessels towing a single net. The spread and depth of the net is controlled by adjusting the speed of the boats and the distance between them. See Figure 1.

INSTRUCTIONS

For instructions on completing the Header fields **A, B and D** refer to the Common Haul Log Data section of the NEFSC Observer Program Manual.

GEAR INFORMATION

1. GEAR NUMBER(S): Record the consecutive number(s) assigned to each uniquely configured gear hauled and for which characteristics are described. See the definition of gear in the introduction.

NOTE: If two or more identical gears are used, assign each gear its own gear number and record them on separate Pair and Single Mid-Water Trawl Gear Characteristics Logs with 10 random codend mesh size measurements collected for each codend.

Example: The first gear is "1", and its characteristics will be recorded on one Pair and Single Mid-Water Trawl Gear Characteristics Log. The second gear, although identical to gear "1" must have its own separate Pair and Single Mid-Water Trawl Gear Characteristics Log with 10 random codend mesh measurements collected for that codend.

2. NET NAME: Record the common name of the net. If it does not have a common name, record comments on any characteristics (ex; short vertical opening, sweep gear not heavy) that help to identify the net. This information may be obtained from the Captain.

Examples: Semi-Pelagic Trawl

3. NET TYPE: Record the name of the net type used. This information may be obtained from the Captain.

Example: Four-seam squid trawl.

4. NET BUILDER: Record the name of the company or individual who made the net. This information may be obtained from the Captain.

NOTE: If built by the captain or crew record "custom built" in this field.

Example: Swan Net Gundry.

5. YEAR NET MADE: Record the four digit year the net was made. This information may be obtained from the Captain.

Example: 2000.

6. GEAR FISHED: Record how this gear is fished

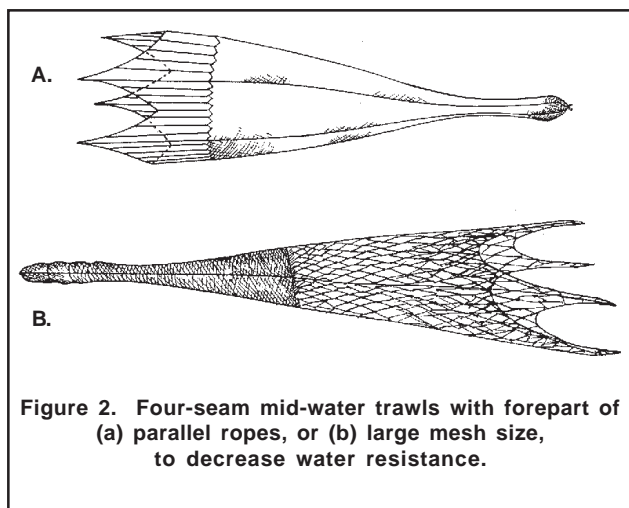
by placing an "X" next to the appropriate code:

- 0 = Unknown.
- 1 = Pelagic, or in the water column, with the net never coming in contact with the seabed.
- 2 = Semi-pelagic, or in the water column, with the net seldom coming in contact with the seabed.
- 3 = Bottom, or with the net constantly in contact with the seabed.
- 9 = Other, record how the gear is fished on line 6A.

NET

7. CONSTRUCTION: Record the type of net construction (see Figure 2) used in the forward portion of the net by placing an "X" next to the appropriate code:

- 0 = Unknown.
- 1 = Rope/Large Mesh.
- 2 = Parallel Rope Trawl.
- 9 = Other, record the net type on line 7A.

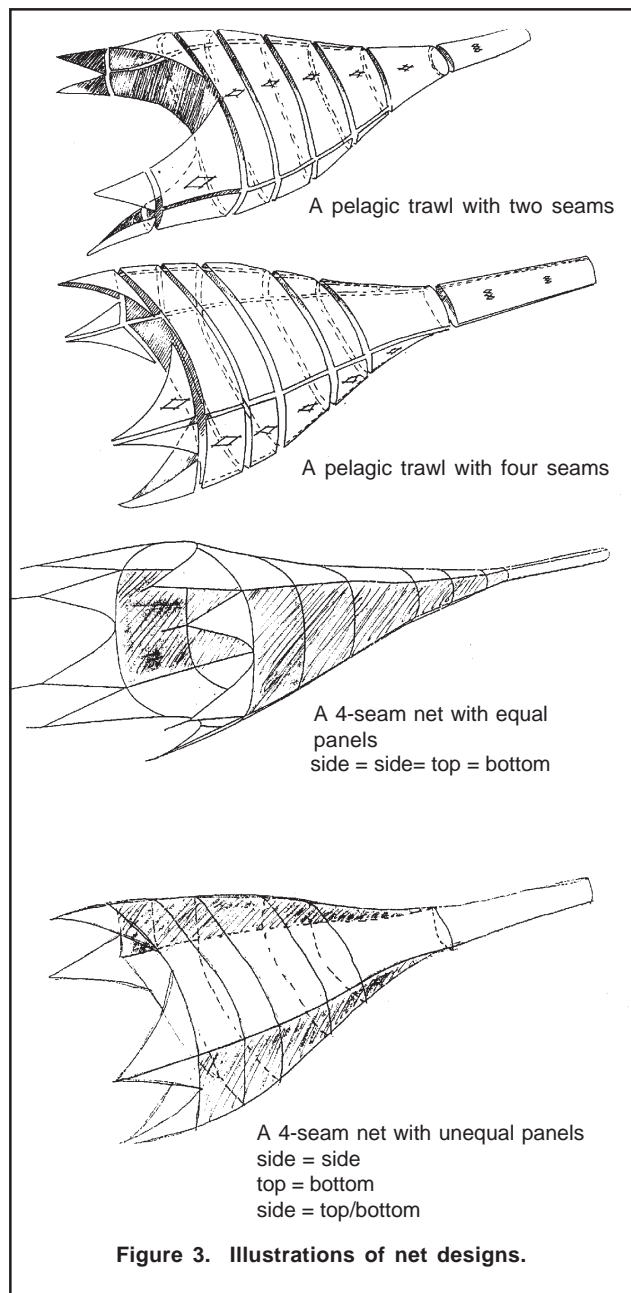


8. DESIGN: Record the construction design of this net by placing an "X" next to the appropriate code:

- 0 = Unknown.
- 1 = 2 Seam.
- 2 = 4 Seam, Equal Panels.
- 3 = 4 Seam, Unequal Panels.
- 9 = Other, record the net construction design on line 8A.

NOTE: See Figure 3 for illustration of net

designs.



9. MINIMUM MESH SIZE: Record, to the nearest tenth of an inch, the minimum inside mesh measurement in this net (not including the codend). This information may be obtained from the Captain.

10. MAXIMUM MESH SIZE: Record, to the nearest tenth of an inch, the maximum inside mesh measurement in this net (typically found in the forward section of the net). This information may be obtained from the Captain.

DOORS

11. USED?: Record whether doors are used with this gear by placing an "X" next to the appropriate code:

0 = No.

1 = Yes.

12. WEIGHT: Record, in whole kilograms, the weight of **one** door used with this gear. This information may be obtained from the Captain.

WEIGHTS

13. USED?: Record whether weights are used on this gear by placing an "X" next to the appropriate code:

0 = No.

1 = Yes.

14. WEIGHT: Record, in whole pounds, the **total** poundage of **all** weights used on this gear. This information may be obtained from the Captain.

NOTE: Do not include the weight of the doors in this field.

15. WEIGHT - ACTUAL OR ESTIMATED: Record whether the weight recorded in #14 is an actual or estimated weight by placing an "X" next to the appropriate code:

1 = Actual.

2 = Estimated.

CONSTRUCTION MATERIAL

16. TYPE: Record the type of construction material used in the body of the net (not including the codend) and the codend by placing an "X" next to the appropriate code:

00 = Unknown.

01 = Nylon.

02 = Poly.

03 = Kevlar®.

04 = Spectra®.

05 = Tenex®.

06 = Nomex®.

98 = Combination, record all construction material types on line 16A.

99 = Other, record the construction material

type on line 16A.

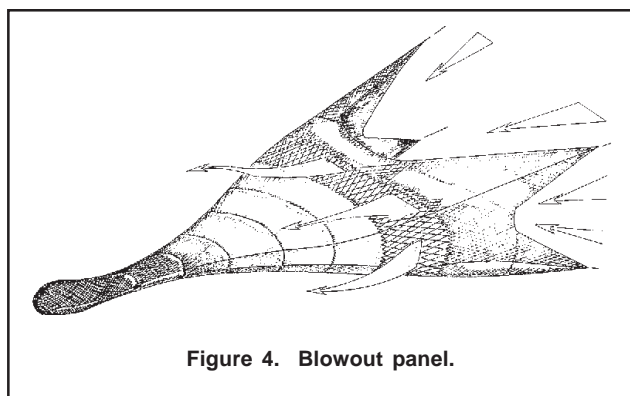
BUOYANCY/RELEASE DEVICES

17. FLOATS USED?: Record whether floats are used on this gear by placing an "X" next to the appropriate code:

- 0 = No.
1 = Yes.

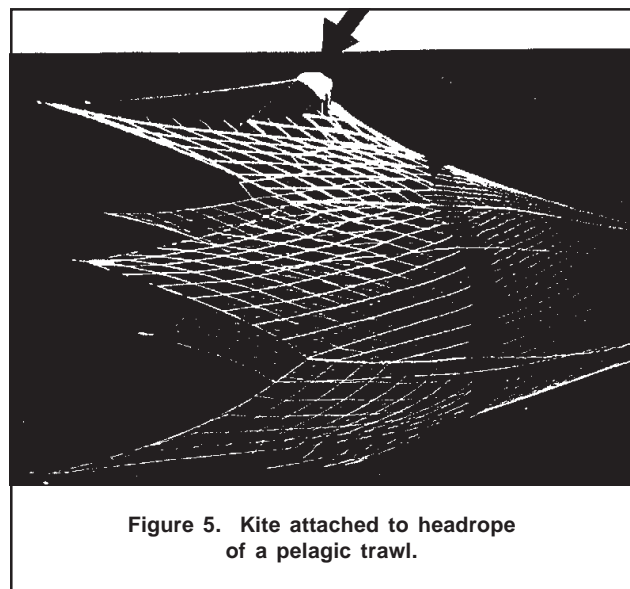
18. BLOWOUT USED?: Record whether a "blowout" section (see Figure 4) is used in this gear by placing an "X" next to the appropriate code:

- 0 = No.
1 = Yes.



19. KITE USED?: Record whether a kite(s) (see Figure 5) is (are) used in this net by placing an "X" next to the appropriate code:

- 0 = No.
1 = Yes.

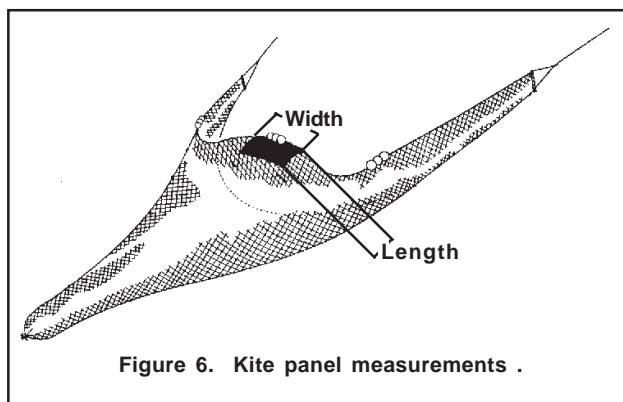


KITE PANEL

20. NUMBER: Record the **total** number of panels used in a kite in this net.

21. LENGTH: Record, in whole inches, the average length of the panels used in a kite in this net. This measurement will be taken along the edge of the panel which is perpendicular to the headrope. See Figure 6.

22. WIDTH: Record, in whole inches, the average width of the panels used in a kite in this net. This measurement will be taken along the edge of the panel which is parallel to the headrope. See Figure 6.



FLOATS

23. NUMBER: Record the total number of floats attached to the headrope.

24. SIZE: Record the diameter, in whole inches, of the majority of floats attached to the headrope.

LENGTH MEASUREMENTS

25. HEADROPE: Record, in whole feet, the length of the rope along the top of the net. This information may be obtained from the Captain. See Figure 7.

26. FOOTROPE/SWEEP: Record, in whole feet, the length of the rope along the bottom of the net. This information may be obtained from the Captain. See Figure 7.

NOTE: This measurement is the distance from the lower bridle on one side of the net to the lower bridle on the other side of the net.

NOTE: The footrope may also be referred to as a fishing line in some regions.

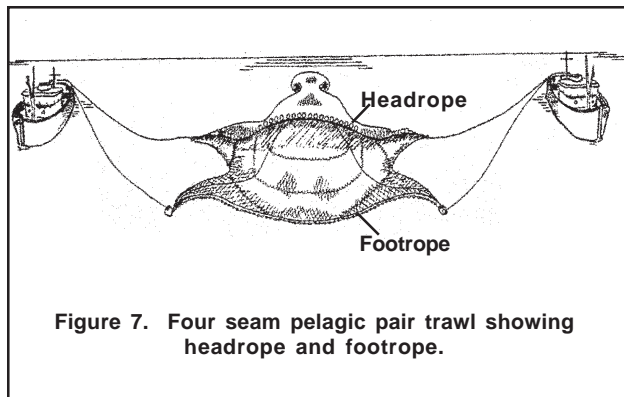


Figure 7. Four seam pelagic pair trawl showing headrope and footrope.

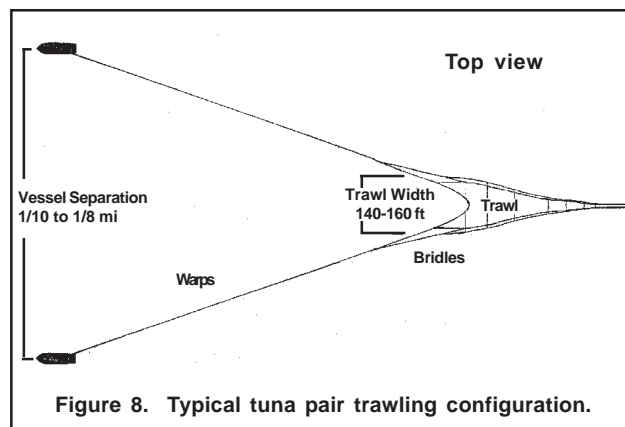


Figure 8. Typical tuna pair trawling configuration.

27. TOP BRIDLE: Record, in whole fathoms, the length of the top bridle. This information may be obtained from the Captain. See Figure 9.

28. WING BRIDLE: Record, in whole fathoms, the length of a wing bridle. This information may be obtained from the Captain. See Figure 9.

NOTE: The bridles may also be referred to as legs in some regions.

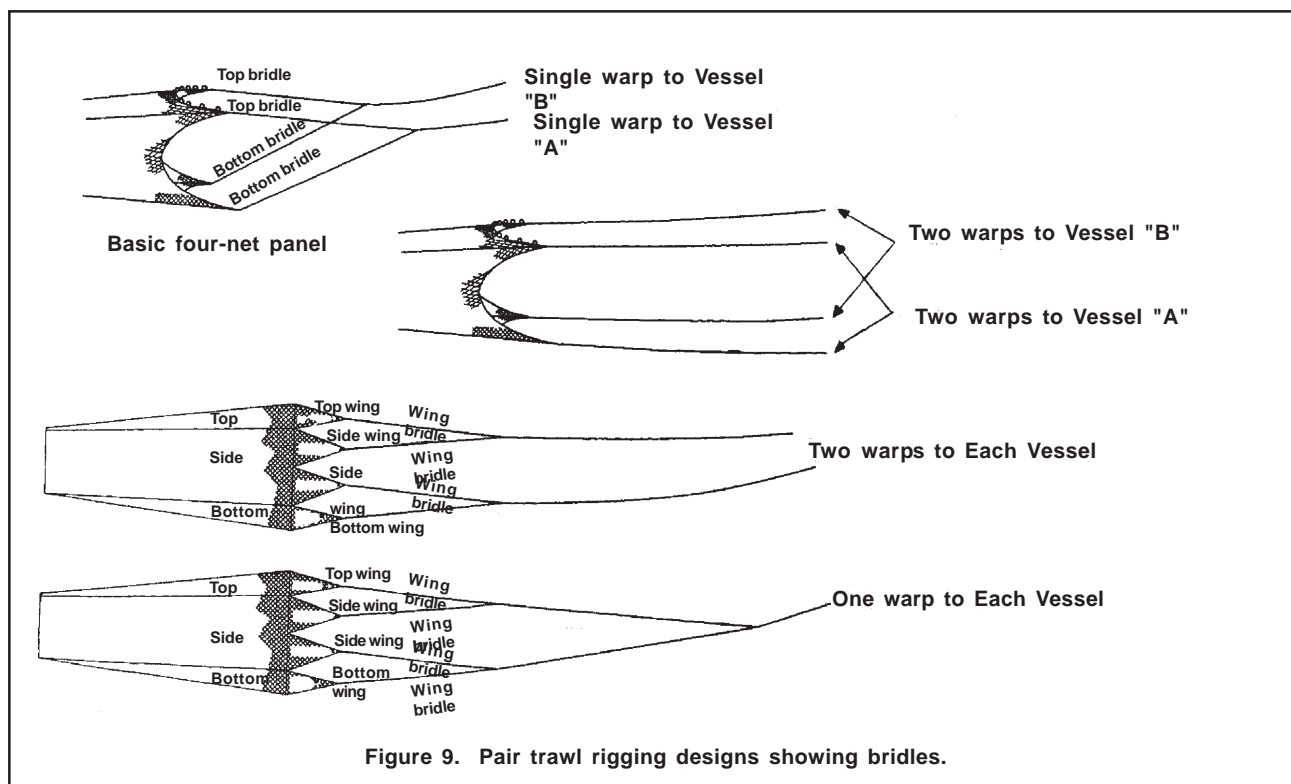
29. BOTTOM BRIDLE: Record, in whole fath-

oms, the length of a bottom bridle. This information may be obtained from the Captain. See Figure 9.

BRIDLES

30. BRIDLES PER WARP: Record the number of bridles attached to each warp. This information may be obtained by reviewing the net plans or from the Captain. See Figures 8 and 9.

31. BRIDLES PER SIDE: Record the number of wings or bridles found on **one** side (left or right) of the net. See Figures 8 and 9.



32. WARPS PER BOAT: Record the number of warps fished by each boat. See Figures 8 and 9.

NOTE: This field should only be filled in for Pair Trawl Trips. Otherwise, dash this field.

FISHING CIRCLE

33. NUMBER OF MESHES: Record the number of meshes in the fishing circle. This information may be obtained from the Captain. Do not include the meshes in the gore. See the definition of fishing circle in the introduction and Figure 10.

NOTE: The Shuman pelagic nets generally have no gore meshes. The "French" net may have up to 20% in the gore meshes.

34. FISHING CIRCLE MESH SIZE: Record, in whole inches, the largest mesh measurement (inside knot to knot) from the fishing circle. This information may be obtained from the Captain. See the definition of fishing circle in the introduction and Figure 10.

NOTE: See Figure 2 in the Otter Trawl Gear Characteristics Log Instructions for an illustration of mesh measurement.

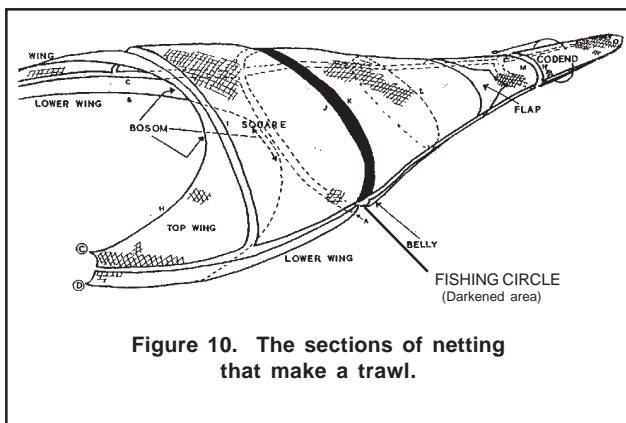


Figure 10. The sections of netting that make a trawl.

CODEND

35. HUNG: Record the hanging configuration of the codend by placing an "X" next to the appropriate code:

- 0 = Unknown.
- 1 = Diamond.
- 2 = Square.
- 3 = Square, Wrapped.
- 8 = Combination, record the hanging

configuration in COMMENTS.

NOTE: If the codend is wrapped, this is considered chafing gear. Be sure to record "Yes" (1) for CHAFING GEAR USED (#41).

NOTE: See Figure 10 for the location of the codend, and Figure 2 in the Otter Trawl Gear Characteristics Log Instructions for an illustration of diamond and square hanging configurations.

36. TWINE TYPE: Record whether the twine used in the codend is single or double stranded by placing an "X" next to the appropriate code:

- 1 = Single.
- 2 = Double.
- 3 = Single on Top/Double on Bottom.
- 9 = Other, record the twine type in comments.

37. CODEND MESH SIZE: Record, in whole millimeters, ten randomly selected meshes from the codend. These measurements should be stretched inside knot to knot taken in the direction in which the mesh is hung. Use calipers for these measurements.

NOTE: These measurements are **not** bar lengths.

NOTE: Select a portion of the net that is relatively free of mends. Count at least 5 meshes up from the terminus of the codend and 5 meshes in from the side seam. Take measurements while the net is empty and wet. To ensure the net is "wet" or "soaked," it is preferably measured after being fished or used for at least one haul. Measurements should not be taken when the codend is frozen.

NOTE: See Figure 2 in the Otter Trawl Gear Characteristics Log instructions for an illustration of mesh measurement. See also Appendix P. Vernier Caliper Instructions for further information.

38. LINER USED?: Record whether a liner is used in the net's codend by placing an "X" next to the appropriate code:

- 0 = No.
- 1 = Yes.

39. LINER MESH SIZE: Record, in whole millimeters, four randomly selected meshes from the liner in the codend. These measurements should be stretched inside knot to knot taken in the direction in which the mesh is hung. Use calipers for this measurement.

NOTE: The liner mesh size should be smaller than the codend mesh size.

NOTE: See Figure 2 in the Otter Trawl Gear Characteristics Log for an illustration of mesh measurement. See also Appendix P. Vernier Caliper Instructions for further information.

40. STRENGTHENER USED?: Record whether strengthener material is used in the codend of this net by placing an "X" next to the appropriate code:

- 0 = No.
- 1 = Yes.

41. CHAFING GEAR USED?: Record whether chafing gear is used on the codend by placing an "X" next to the appropriate code:

- 0 = No.
- 1 = Yes.

NOTE: A codend in which the meshes are "wrapped" is considered to have chafing gear.

GEAR MOUNTED ELECTRONICS

42. USED?: Record whether any transducers are used on this gear by placing an "X" next to the appropriate code:

- 0 = No.
- 1 = Yes.

43. NUMBER OF TRANSDUCERS: Record the number of transducers used on this gear.

44. TYPE: Record the type of transducer used on this gear by placing an "X" next to the appropriate code:

- 0 = Unknown.
- 1 = Wired.
- 2 = Wireless.
- 3 = Both.

45. BRAND: Record the brand of transducers used on this gear by placing an "X" next to the appropriate

code:

- 0 = Unknown.
- 1 = Furuno®.
- 2 = Simrad®.
- 3 = Northstar Technical.
- 4 = Notus.
- 5 = Marport.
- 6 = Scanmar.
- 8 = Combination, record all brands on line 45A.
- 9 = Other, record the transducer brand on line 45A.

46. LOCATION: Record the location of transducers used on this gear by placing an "X" next to the appropriate code:

- 0 = Unknown.
- 1 = Headrope.
- 2 = Wings.
- 3 = Footrope.
- 4 = Headrope and Footrope.
- 5 = Door.
- 6 = Codend.
- 8 = Other Combination, record all transducer locations on line 46A.
- 9 = Other, record the transducer location on line 46A.

47. NUMBER OF RECEIVERS: Record the **total** number of receivers used on **both** vessels for the transducer(s).

EXCLUDER/SEPARATOR DEVICE

48. USED?: Record whether an excluder or separator device (see Figure 11) is used on this gear by placing an "X" next to the appropriate code:

- 0 = No.
- 1 = Yes.

49. TYPE: Record the type of excluder or separator device used on this gear by placing an "X" next to the appropriate code:

- 00 = Unknown.
- 01 = Nordmore Grate (see Figure 11).
- 03 = Separator Panel.
- 04 = Guiding Device, *i.e.* a funnel or "flap" (see Figure 10 and 11).

- 05 = Raised Footrope.
- 20 = T.E.D., Unknown.
- 21 = Standard T.E.D.
- 22 = Weedless T.E.D.
- 23 = Flounder T.E.D.
- 24 = Bent Rod T.E.D.
- 25 = Conch T.E.D.
- 26 = Flat Bottom T.E.D.
- 27 = Whelk T.E.D.
- 28 = Flexible T.E.D.
- 29 = Parker Soft T.E.D.
- 30 = Experimental T.E.D.
- 98 = Combination, record all excluder/separ-
ator device types in comments.
- 99 = Other, record the excluder/separ-
ator device type in comments.

NOTE: See Figure 9 in the Otter Trawl Gear Characteristics Log instructions for an illustration of T.E.D. types.

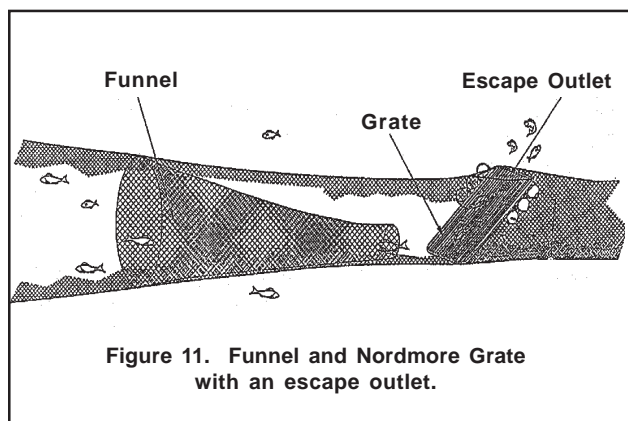


Figure 11. Funnel and Nordmore Grate with an escape outlet.

50. T.E.D. EXTENSION MESH SIZE: Record, to the nearest tenth of an inch, the size of the mesh of the T.E.D. extension or the webbing surrounding the T.E.D. This measurement should be taken 3-5 meshes forward of the leading edge of the grid. These measurements should be stretched inside knot to knot taken in the direction in which the mesh is hung.

NOTE: The T.E.D. extension is a cylindrical piece of webbing distinct from the main trawl body, wings, codend and any other net extension(s).

ESCAPE OUTLET

51. USED?: Record whether an escape outlet is used

on this gear by placing an "X" next to the appropriate code (see Figure 11):

- 0 = No.
- 1 = Yes.

52. ESCAPE OUTLET TYPE: Record the type of escape outlet used on this gear by recording the appropriate code:

- 0 = Unknown.
- 1 = Panel.
- 2 = Opening.
- 3 = Single Flap.
- 4 = Double Flap.
- 9 = Other, record the escape outlet type on line 52A.

53. MESH SIZE (LENGTH AND WIDTH): Record, in whole inches, the average size for the length (runs from the front of the net towards the codend) and the width (runs from side to side of the net) of the meshes used in the escape outlet. This number may be obtained from the Captain.

NOTE: It is preferred that all Escape Outlet measurements be taken by # MESHES (#54) and MESH SIZE (#53). Length and Width in inches of the escape outlet is an acceptable secondary method.

54. # MESHES (LENGTH AND WIDTH): Record the number of meshes for the length (runs from the front of the net towards the codend) and width (runs from side to side of the net) of the escape outlet. These numbers may be obtained from the Captain.

NOTE: For T.E.D. outlets, the width measurement is taken by counting the number of meshes along the leading edge of the opening. If this cannot be obtained by the observer then dash this field.

NOTE: If the outlet shape is triangular, record the # of meshes on the side of the triangle which runs from side to side in the net for both length and width.

NOTE: If the outlet shape is trapezoid, record the number of meshes that are in the longer length and the wider width.

55. ESCAPE OUTLET SIZE (LENGTH AND WIDTH): Record, in whole inches, the length (runs

from the front of the net towards the codend) and width (runs from side to side of the net) of the escape outlet. This information may be obtained from the Captain.

56. SHAPE: Record the shape of the escape outlet by recording the appropriate code:

- 00 = Unknown.
- 01 = Rectangular.
- 05 = Trapezoid.
- 06 = Square.
- 07 = Diamond.
- 08 = Triangular.
- 09 = Semi-Circle.
- 11 = Horizontal Cut.
- 99 = Other, record the escape outlet shape in comments.

57. LOCATION: Record the location of the escape outlet used on this gear by recording the appropriate code:

- 0 = Unknown.
- 1 = Net Top.
- 2 = Net Bottom.
- 3 = Net Side.
- 4 = Codend Top.
- 5 = Codend Bottom.
- 8 = Combination, record all escape outlet locations in comments.
- 9 = Other, record the escape outlet location in comments.

COMMENTS

Record any additional information about this gear, *i.e.*, unusual arrangements of the gear, type of net, etc. If more room is needed, use the back of this log, making sure to write "See Back" on the front of the log. Reference each comment with its corresponding field name.